Non-porting SPs are required to do system development on their message processing systems to accommodate the modified roamer CDRs.

6.3.2 Porting SPs

Porting SPs are required to do development to modify to their existing OSSs. These will include SOE, message processing, and billing. Porting SPs may be required to develop new interfaces for the ICP and SOA

Vendor management will be a critical issue. SPs will need to ensure that vendors are progressing according to company specific project timelines.

7.0 TESTING

7.1 Internal Testing

It is very important that all SPs who have made any LNP modifications to their systems perform complete internal testing. It is recommended that vendor testing be completed prior to acceptance testing by the SP. This adds an additional layer of testing that is not reflected in the industry timeline, but still needs to be completed.

7.1.1 Non-Porting SPs

For non-porting SPs, this will include:

- MSC upgrades to include the ability to store and record the MSID and MDN in the VLR and in the CDRs;
- Modifications to the MPS to accept the modified switch CDRs;
- Properly format the billing records, such as CIBER X2; and
- Potential testing of these billing records with the clearinghouse.

7.1.2 Porting SPs

For porting SPs, internal testing will be more extensive than for non-porting service providers. Testing for porting SPs will include:

- MSC upgrades to include the ability to store and record the MSID and MDN in the VLR and in the CDRs;
- Modifications to the MPS to accept the modified switch CDRs;
- Properly format the billing records, such as CIBER X2;
- Potential testing of these billing records with the clearinghouse;
- The ability to provision both MDNs and MSIDs in the HLR;
- The ability to distinguish between home customers and roamers;
- The provision of correct information for messaging; and

- Provision of correct ANI.

Service order systems testing should be completed for the following scenarios:

- Assignment of a new MSID and MDN to a new non-porting subscriber;
- Porting in a MDN;
- Porting out a MDN;
- The disconnect of a ported number;
- Assignment of "dedicated" MSIDs for specific NPA-NXX based services (such as Pre-pay); and
- The interfaces between Service Orders Systems and the ICP and SOA.

MPS testing will include:

- The ability to generate and receive billing records (including with the clearinghouse);
- Processing switch CDRs;
- Generation and receipt of reseller CDRs; and
- Generation and receipt of CDRs for adjunct systems.

If the SP makes any modifications to billing records these will also need to be thoroughly tested.

Testing for other interfaces will include:

- SOA interfaces;
- ICP interfaces; and
- Any other interfaces that may be impacted by LNP modifications.

Regression testing on internal systems should be included in all aspects of internal testing to ensure that no unexpected changes have occurred.

7.2 NPAC Testing for Porting SPs

7.2.1 Testing Overview

As transactions flow between NPAC/SMS and LSMS/SOA, it is required that LSMS/SOA respond correctly to NPAC/SMS interface messaging. The initial test plans must be in accordance with industry accepted data exchange protocols. The scope of the NPAC/SMS Internal Verification Test Plan, Turn-Up Test Plan, and the NPAC SMS Interoperability Test Plan are to:

- Provide service support documents that will let participating SPs and their respective SOA and LSMS vendor(s), identify their specific interoperability testing responsibilities.
- Identify the tests that have to be performed.

- Interpret the results of the tests for follow-on regression testing (if necessary).

In view of the dynamic nature of LNP, it is envisioned that the testing processes will continue with new NPAC software releases and is considered a critical function of the NPAC. NPAC Turn-Up Testing is a pre-requisite to actual service initiation. When a SP begins porting in a local market, their LSMS/SOA must receive Interoperability Certification with the NeuStar NPAC/SMS Test Lab. On a recurring basis, NPAC regression testing and Interoperability Testing with the SPs must be conducted for each new software release of the NPAC's SOA, or LSMS.

Standalone and Interoperability tests for the SOA/LSMS within the respective SP's network should be completed to ensure conformance to standards prior to Certification tests with NPAC.

Testing can be broken down into several different segments including Interoperability, Turn-up, Regression, Round Robin and LTI. Each segment is described in the following paragraphs.

7.2.2 Interoperability Test

LSMS/SOA providers must test with the Interoperability test laboratory to ensure local systems properly interface with the NPAC/SMS. This phase tests Stack to Stack, Security, Recovery, Managed Object Compliance and Application to Application functionality. The Interoperability Test Plan (ITP) is developed by NeuStar and reviewed with the SP's to ensure completeness.

The ITP will be jointly executed by the NeuStar Test Lab and the individual SPs, or SOA/LSMS vendors wishing to test their SOA and/or LSMS systems. The test cases defined in the test plan must be executed and passed, before any SP is allowed to connect their SOA or LSMS to the actual NPAC SMS. This is to ensure that the SOA and LSMS do not corrupt the NPAC SMS and vice versa. Interoperability testing is required under the following circumstances:

- New release interoperability test cases must be run if a SP is supporting new functionality included in the release.

- If a SOA or LSMS product implements new features that existed in the NPAC SMS prior to a new release, the product must execute the previous release ITP test cases corresponding to the new functionality.

- It is mandatory for all LSMS and SOA products to execute the interoperability testing for a new release including the standard regression test cases to ensure backward compatibility with their existing SOA or LSMS products.

NPAC training is available from NeuStar and can be scheduled at the time the SP's User Agreement is signed. *For more information regarding training classes and schedules*

contact NewStar's Global Training & Documentation manager Joe Ferrallo at 312-706-6528 or e-mail to joe.ferrallo@neustar.com.

NeuStar also hosts quarterly Cross Regional meetings. The Cross Regional meetings are designed as an open forum for all NPAC users to discuss technical and operations issues associated with number portability and the use of the NPAC service provided by NeuStar. *For more information refer to* http://www.npac.com/.

7.2.2.1 SOA/LSMS Preparation for Interoperability Testing and Certification

Participating SPs are required to design, code, and internally test their LSMS/SOA systems prior to initiating testing with the NPAC/SMS. Since the LSMS has a peer-to-peer relationship with the NPAC SMS, the LSMS will perform the role of both Manager and Agent from a Common Management Information Protocol (CMIP) perspective. This requires that the scripted LSMS/SOA initiated test cases and drivers (NPAC/SMS Interoperability Test Plan) be implemented and executed by the SP before actual testing with the NeuStarTest Lab.

7.2.2.2 SOA/LSMS Interoperability Testing and Certification with the NeuStar Test Lab

Interoperability testing between the SP's LSMS/SOA and the NPAC/SMS test lab is designed to ensure that each platform meets the technical and operational processing requirements for the transactional exchange of ported SP information. In some cases, the SP and the vendor may be one and the same. Each SP/vendor will be provided test access in an isolated environment that will allow careful and methodical execution of each test phase with evaluation times incorporated in the testing schedule.

Total elapsed time to complete all test phases is estimated at six weeks for an LSMS interface and three weeks for a SOA interface. However, these estimated times can vary depending on the functional complexity and size of the release. The SP is responsible for scheduling a test window with the NPAC. It should be noted that the SP (or through its designated agent) may test the SOA and LSMS separately. However, the SP is required to implement all SOA/LSMS initiated test cases and drivers before actual testing can be completed.

Interoperability Test scenarios contain representative samples of mandatory and optional tests. These tests are designed to address general areas of LSMS/SOA conformance to the ISO/ITU standards for OSI Conformance Testing Methodology and Framework.

Upon successful execution of all mandatory test cases, a certification shall be issued to the SP authorizing connection to the production NPAC/SMS. This process is repeated for each NPAC software release.

7.2.3 Turn Up Testing

Testing is done by NEUSTAR and new SPs to ensure that their software is functional in the normal operating environment, utilizing data communication support systems to communicate with a SP's LSMS/SOA Systems. The Turn-up Test Plan (TTP) is a derivative of a variety of sources developed by NEUSTAR and reviewed by the SPs to ensure completeness. Depending upon the nature and complexity of the release and the associated number of test cases, this phase of testing takes 3 to 7 weeks.

7.2.3.1 SP/NPAC SMS Turn Up Testing

Once a SP has obtained LSMS and/or SOA certification, connection to the production NPAC/SMS will be permitted so that Turn-up Testing can be conducted. Although the TTP is based upon elements similar to the ITP, and some elements of the NPAC Internal Verification Test Plan (IVTP), it addresses issues specific to activation and testing of the SP systems within the real production environment.

7.2.3.2 Scope of Testing

The scope of this testing is limited to conducting a subset of test cases identified in the ITP and the NPAC IVTP, and the addition of certain test cases pertinent to the environments such as back up and recovery. These test cases will be conducted in the production environment with each SP, allowing the SP to test and repair any problems with LSMS or SOA functionality.

7.2.4 Regression Test

Testing is done in accordance with the Regression Test Plan (RTP) between the NPAC and existing SPs to ensure changes have not adversely affected functionality previously tested and in production, as well as testing new functionality included in a particular release. The RTP is developed by the NPAC and reviewed by the SPs to ensure completeness of the plan. RT may take between 6 to 10 weeks to complete, depending on the nature and complexity of the release.

7.2.5 Round Robin Testing

This is the final phase of new release testing, identified as Round Robin Testing (RRT). RRT permits SPs to test LNP functionality in a "live" environment between two or more SPs. SPs who have successfully completed SP to SP testing in other regions are only expected to do RRT and Fail over testing.

7.2.6 LTI Testing

SPs utilizing the LTI rather than a SOA system must also plan to test. Test cases for this purpose can be obtained from NeuStar. These cases will need to be executed by a new entrant in a region for primary or backup processing.

7.3 Inter-carrier Testing for Porting and Non-Porting SPs

The inter-company wireless to wireless testing will be organized through a national Wireless LNP Operations Team. For wireless to wireline and wireline to wireless, the National Number Portability Operations (NNPO) Team agreed to form a testing subcommittee. Each SP will designate national coordinators who will attend the Operations Meetings. Inter-company testing will be coordinated through SP bilateral arrangements. Each SP will agree to and conduct a set of tests or use the recommended tests defined in the Test Plan. Participants may choose to run additional tests that address any specific needs, architectures or business arrangements.

A "black box" testing approach will be used for inter-company testing. Black box testing implies that the tester is not concerned with what is inside the black box. Instead, the testing validates that the black box functions and interfaces with another SP as specified. When applied to inter-company LNP testing, the black box approach means the NeuStar Test Lab will validate the interactions between SPs but not delve into the internal systems or processes of the SPs.

The following SP functions are impacted by LNP and are included in the test validations:

- Porting Order Exchange
- Service Provisioning
- Exception Processing – Order Cancellation
- Disconnected TN Snapback to Code Holder (or Block Holder)
- Call Flows
- 911 Record Changes
- Inter-SP Billing

7.3.1 Inter-carrier Test Plan

The Inter-carrier Test Plan tests the LRN solution for LNP Phase II.

The goal of the Test Plan is to accurately evaluate the ability of various SPs to implement LNP. The focus is to ensure conformance and compatibility of individual networks to the various standards. Testing includes the associated support systems, business arrangements, and interfaces between the various SPs. The intent is to establish test cases in these areas to ensure that the customer does not encounter any disruption or degradation of service when porting DNs from one SP to another. The transition will be transparent between SPs using the LRN method.

The Test Plan contains a series of tests developed by a team of participating companies. These tests are meant to ensure that the porting of DNs to or from a SP using the LRN solution will be successful. The Test Plan includes the porting of simulated live customers between SPs. This is accomplished by establishing test numbers and using existing or new processes. Using existing or newly established processes for testing will

ensure that each SP's internal processes and systems will support number portability. This plan includes testing of porting between wireless SPs as well as porting between wireline and wireless SPs. Any potentially destructive tests should be performed in a lab or another internal environment and should not be performed between SPs.

Additionally, this test plan only addresses LNP functionality between SPs. Validation of processes that were in place prior to the implementation of LNP will only be addressed to the extent that they impact or are impacted by LNP. Additionally, interactions between SPs and their vendors or third party network SPs are considered part of the SP's internal processes and are outside the scope of the inter-carrier test plan. The test cases and validation points in this test plan are defined to address LNP systems and processes between SPs.

7.3.2 Inter-carrier Test Coordination

7.3.2.1 National Test Organization Structure

Each SP will identify a company testing coordinator. If a SP does not provide this information or is unwilling to, then it will be assumed that they do not wish to engage in inter-carrier testing.

The testing coordinator will be responsible for all LNP testing activities for their respective company. This may be done on a national basis, regional basis, or any other geographic basis of their choosing. This information along with names and contact telephone numbers should be made available to NNPO, the LNPAWG, or any other similar organization.

This is for company to company LNP testing and does not include any NPAC certification activities or any third party vendors. Third party vendors will be the responsibility of those companies to which services are provided.

7.3.2.2 Local Test Organization Structure

Similar to the wireline industry, the wireless industry must form a LNP Operations Team to address nationwide deployment of LNP. Included in this activity is the formation of an inter-carrier testing group to establish the logistics and a project management plan for inter-carrier testing. In addition, for wireline to wireless and wireless to wireline inter-carrier testing, wireless SPs must participate on a joint testing subcommittee of the NNPO. This committee should be formed by third quarter 2000.

8. DEPLOYMENT CONSIDERATIONS

Disclaimer: This list of implementation considerations is not all inclusive. It is not intended to identify all the responsibilities and functions for wireless service providers.

Please reference the Wireless Industry Timeline in Appendix B for the appropriate milestones.

8.1 Non-Porting SPs

These are considerations or requirements for SPs that are currently not required to port and have not received a BFR.

8.1.1 Network

- Upgrade all MSCs with the MIN separation release and Number Portability CDR configuration;
- Verify all translations: DN and MIN tables, GTT, Point Codes, etc.;
- Verify the signaling system and network capacity;
- Develop troubleshooting and network monitoring M & Ps;
- Participate in SP to SP testing with roaming partners; and
- Execute a First Market Application (FMA) and Network roll out.

8.1.2 Message Processing

- Deploy new CDR creation and data fields in production systems.

8.2 Porting SPs

These are considerations for SPs that are required to port or have received a BFR.

8.2.1 Deployment Preparation

It is recommended that SPs address the following tasks prior to deployment of LNP with other SPs.

- Participate in the LNPAWG, ATIS and other LNP related industry fora;
- Attend the NeuStar Cross-Regional meetings;
- Participate in the Wireless Operations Team and NNPO meetings;
- Develop a project management and implementation plan;
- Interface with the NPAC for capacity, performance and M&P familiarity;
- Establish LLC membership;
- Establish NPAC contract and schedule training; and
- Send LNP port notification and /or BFRs.

8.2.2 Network

- Upgrade all MSCs with the MIN separation release and Number Portability CDR configuration;
- Verify all Translations; TN and MIN tables, GTT, Point Codes, etc.
- Verify the Signaling System and Network capacity;

- Verify SCP and/or SCP capacities:
- Develop Troubleshooting and Network Monitoring M & Ps:
- Participate in SP to SP testing with roaming partners:
- Participate with resellers in SP to SP testing:
- Develop a disaster recovery plan: and
- Execute a First Market Application and Network roll out.

8.2.3 IT, Billing, Customer Care, and TN Administration

These implementation considerations were consolidated to reflect the interdependencies of systems and M&Ps associated with IT, Billing, Customer Care, and TN Administration functions.

- Implementation of LSMS ;
- Implementation of SOA;
- Implement ICP; *(Refer to the CTIA document in Appendix A)*
- Deploy ICP and inter-service provider communications M & Ps;
- Deploy new CDR creation and data fields in production systems;
- Coordinate all service order and maintenance window activity with the NPAC;
- Monitor NPAC associations, bulk data downloads, and large port activity;
- Provide for MDN, MIN, and IMSI administration and database integrity for porting as well as managing NPA splits and overlays; and
- Provide for disaster recovery and association failure.

9.0 GLOSSARY

AMPS - Advanced Mobile Phone Service
ANI - Automatic Number Identification
ANSI - American National Standards Institute
ATIS - Alliance for Telecommunication Industry Solutions
BFR - Bona Fide Request
CCB - Common Carrier Bureau
CDMA - Code Division Multiple Access
CDR - Call Detail Record
CIBER - Cellular Inter-carrier Billing Exchange Record
CLASS - Custom Local Area Signaling Services
CMIP - Common Management Interface Protocol
CMRS - Commercial Mobile Radio Services
CNAM - Customer Name
CTIA - Cellular Telephone Industry Association
DN - Directory Number

EDI - Electronic Data Interface
FCC - Federal Communications Commission
FCI - Forward Code Indicator
FMA - First Market Application
FOC – Firm Order Commitment
FRS - Functional Requirements Specifications
GR - Generic Requirements
GTT - Global Title Translation
GUI - Graphical User Interface
HLR - Home Location Register
ICP - Inter-carrier Communications Process
IIS - Inter-operable Interface Specifications
IMSI - International Mobile Station Identifier
INC - Industry Numbering Committee
ISO/ITU - International Standards Organization/International Telecommunications Union
ISVM - Inter Switch Voice Messaging
ITP - Interoperability Test Plan
IXC - Inter Exchange Carrier
JIP - Jurisdictional Information Perimeter
LATA - Local Access Transport Area
LEC - Local Exchange Carrier
LERG - Local Exchange Routing Guide
LIDB - Line Information Data Base
LNP - Local Number Portability
LNPAWG - Local Number Portability Working Group
LRN - Location Routing Number
LSMS - Local Service Management System
LSR - Local Service Request
LTI - Low-Tech Interface
MBI - MIN Block Identifier
MDN - Mobile Directory Number
MIN - Mobile Identification Number
MPS - Message Processing System
MSA - Metropolitan Service Area
MSC - Mobile Switching Center
MSID - Mobile Station Identifier
NANC - North American Numbering Council
NANP - North American Number Plan

NANPA - North American Number Plan Administrator
NNPO - National Number Portability Operations
NPAC - Number Portability Administration Center
NPDB - Number Portability Date Base
NPREQ - Number Portability Request
NPSCP - Number Portability Service Control Point
NSP - New Service Provider
OBF - Ordering and Billing Forum
OSI - Open System Interconnect
OSP - Old Service Provider
OSS - Operational Support System
PC - Point Code
PCS - Personal Communications System
PDP - Permissive Dialing Period
POI - Point Of Interconnection
POS - Point of Sale
RRT - Round Robin Testing
RTP - Regression Test Plan
SCCP - Service Connection Control Part
SCP - Service Control Point
SOA - Service Order Administration
SOE - Service Order Entry
SMS - Service Management System
SMR - Specialized Mobile Radio
SP - Service Provider
SPID - Service Provider Identification
SOA - Service Order Administration
SS7 - Signaling System Seven
SSN - Sub System Number
SV - Subscription Version
TCAP - Transaction Capability Application Part
TDMA - Time Division Multiple Access
TN - Telephone Number
TRQ - Technical Requirements
TTP- Turn-up Test Plan
VLR - Virtual Location Register
WNPSC - Wireless Number Portability Subcommittee
WPR - Wireless Port Request

Appendix A

Wireless Inter-carrier Communications Process

CTIA
Numbering Advisory Working Group
Report On

Wireless Intercarrier Communications

Version 2.0

Cellular Telecommunications Industry Association
Numbering Advisory Working Group

Table of Contents

Table of Figures

1 Introduction

The purpose of this document is to define the operational requirements and technical specifications for the exchange of information needed for the Intercarrier Communication process. It represents a consensus developed by the members of the CTIA Numbering Advisory Working Group and is applicable to all CMRS carriers. This includes analog Advanced Mobile phone System (AMPS), Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), and Global System for Mobile Communications (GSM) providers (including digital Specialized Mobile Radio (SMR) providers). Proprietary implementations are outside the scope of this document.

The primary audience for this document is Commercial Mobile Radio Service (CMRS) providers along with wireless equipment and service vendors who assist in the definition, development and deployment of Wireless Number Portability solutions. CMRS providers and vendors are asked to comment on the operational and technical parameters identified in this document. The document will then be discussed at an open forum regarding WNP solutions. Thus, this document is designed to reach a voluntary industry agreement, in order to meet the FCC's WNP mandate. This document may also benefit other groups such as the wireline industry. It assumes the reader is familiar with Wireless Number Portability and the wireless telecommunications technologies.

This document is not intended to supercede any regulatory decision regarding Number Portability or Intercarrier Communications, but is intended to describe the process as it involves CMRS.

2 Background

The FCC Number Portability First Order and Report and Further Notice on Proposed Rulemaking, CC Docket 95-116, dated July 2, 1996, mandated all CMRS providers provide local number portability by June 30, 1999. Work soon began on developing the processes and procedures necessary to implement Wireless Number Portability (WNP).

In January 1998, a CTIA sponsored workshop on Intercarrier Communications recommended adopting a phased approach to WNP Intercarrier Communications. Given the short compliance timeline, the first phase was to begin June 30th, 1999 using a modified version of the wireline Local Service Request (LSR) forms and process. It was suggested that the second phase eliminate the wireline LSR method from the wireless number portability processes for Intercarrier Communications. The workshop recommended that the second phase consider an enhancement to the NPAC or an alternative method which would enable wireless carriers to exchange information about porting subscribers through a third party communication, rather than using direct carrier to carrier communications.

The CTIA Report on Wireless Number Portability was issued to the industry in August of 1998. In that report, the Local Service Request was defined as a method of communication between service providers. The highlighted portion of figure 1 represents the Intercarrier Communication step, using the LSR, within the overall porting process as it was defined in the original CTIA report.

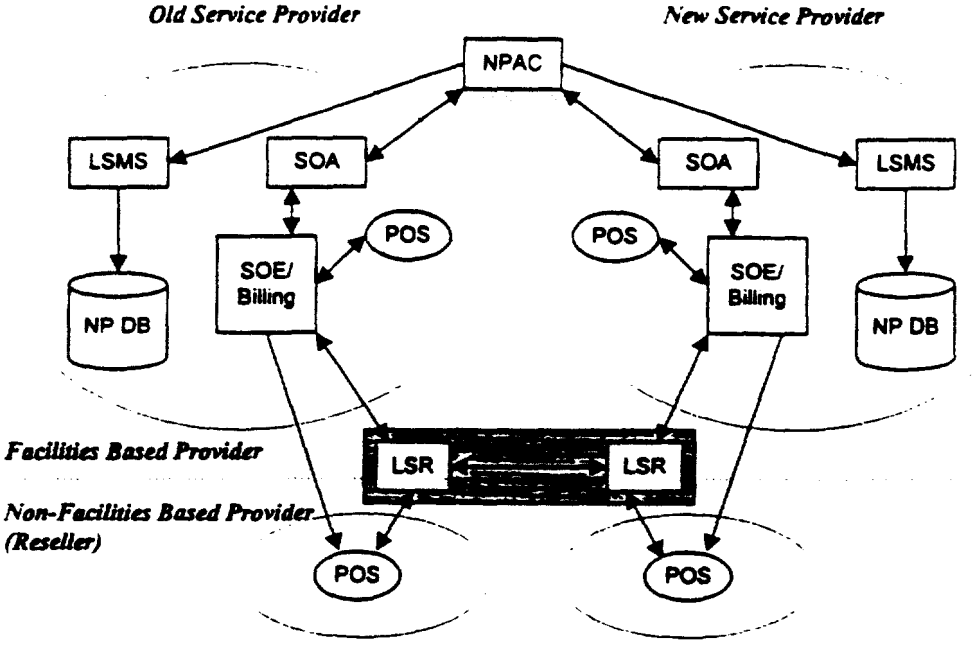

Figure 1- Porting Flow

The LSR consists of fields of information that are contained in "forms". These forms are used to coordinate the porting of a subscriber. The LSR process specifies what information is exchanged, however no functional system specifications were defined for the system that facilitated the LSR communication. A variety of methods may be used for transferring the information including fax, e-mail transfer, Internet access or Electronic Data Interchange (EDI). To support the unique requirements of the CMRS providers, a business case was developed that required a wireless to wireless port to complete within 2 ½ hours. The Intercarrier Communication process was allotted 30 minutes.

Wireline porting, which uses the LSR forms as its *pre-porting* process, has been in place since fourth quarter 1997. This process takes 24 hours for completion. Recent statistics indicate that wireline porting volumes are nearly 500,000 per month[1]. Current CMRS disconnect rates is reported at 2.3% per month or 28% per year.[2] If there was a 1:1 relationship between churn and porting requests, (factoring in growth projections), the volume of porting could reach 40 million individual ports annually. (This is not to suggest a 1:1 relationship will exist). In addition to the challenge of handling more porting activity, the North American Numbering Council recommended to the FCC a 30-minute interval for the intercarrier communications process for wireless to wireless ports. This Report sets out the requirements to achieve the 30-minute interval. If this process is adopted as an industry practice, this will help enable the wireless industry to meet a *pre-porting* interval, which is 48 times faster than the wireline interval.[3]

On February 8, 1999, the FCC granted the CMRS industry an extension regarding their local number portability obligations until November 24, 2002. The additional time granted to CMRS providers makes possible the launch of wireless number portability with an Intercarrier Communications process that adequately supports the industry's needs.

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[1] http://www.npac.com/docs/sv_cnt.txt

[2] CTIA's Wireless Industry Indices: Semi-Annual Data Survey Results A Comprehensive Report from CTIA, January 1985-June 1999 An Analysis of the US Wireless Industry (January 2000 Publication Date) at Section 2.3, Table 18, p. 42

[3] Inter-Service Provider LNP Operations Flows; Provisions with LSR Figure 1 Step 7 (1/4/99)

3 Goals

Five primary goals have been identified to measure the viability of any suggested solution and the successful completion of this document.

1. Develop Standard Communication Process to Avoid Individual Service Level Agreements with each Wireless Service Provider

2. Develop a Communication and Validation Solution with the Goal of Attaining Thirty-Minute Pre- Port Completion Time to Meet Consumer Expectations

3. Identify Pre-Port Process Exceptions

4. Develop a Process to Accommodate Integrated or Standalone Platforms

5. Develop a process that has compatibility with Wireline Service Providers

The first two goals were established based on the observations of the current process used by the wireline industry. One of the most troublesome aspects of porting in the wireline environment is the difficulty incurred when performing the Intercarrier Communication process. In wireline operations, Intercarrier Communications are facilitated using the Local Service Request/Firm Order Commitment (LSR/FOC) forms. This process is a guideline developed by the Alliance for Telecommunication Industry Solutions (ATIS) Ordering and Billing Forum (OBF). The LSR/FOC process allows each carrier a broad latitude in determining how and what information will be used within each wireline carrier's porting process. As a consequence, each wireline carrier may require a different set of mandatory data elements to drive their systems. As a result, there are unique service level agreements between each service provider.

Multiple unique service level agreements require complex systems and internal processes to identify where the LSR originated, what information to expect and how to properly respond with the FOC. It is the goal of this group to eliminate the need for unique service level agreements by establishing a process that defines a specific communication method with a mandatory set of fields. This should reduce the number of errors and in turn help the wireless industry meet the second goal of a process that may be completed within 30 minutes.

The third goal is to define any porting process exceptions. While it is the intent of this document to cover most of the porting scenarios, it would be impossible to consider every contingency. Therefore, any porting exception not covered in detail will be noted.

The fourth goal is to define a process that can be accessed with either a high-tech or low-tech solution. High-tech is defined as a solution that could be fully integrated into a carrier's Point of Sale (POS), Service Order Entry (SOE), or Billing and Customer Care (B&CC) solution thereby reducing duplicate data entry or manual processes. This solution would be applicable to large carriers or carriers expecting large porting volumes. The low-tech solution would provide access to the same process without integration. This solution would be applicable to smaller carriers, carriers expecting smaller porting volumes, a carrier looking at a phased approach or as a backup when there is a problem with the high-tech integrated solution. The primary difference between these solutions is the method of communication and level of integration. There is no difference in the data being exchanged. The concept of high-tech and low-tech is consistent with the processes defined in the overall number portability requirements.

The fifth and final goal is to define a process that in the future could be adapted for use between wireless and wireline service providers. It has been determined that a wireless to wireless process that meets the wireless business objectives and yet has some aspects of the current wireline process would be easier to modify for wireless to wireline use.

4 Intercarrier Communication Processes and Scenarios

4.1 Requirements

The purpose of this section is to review the general requirements for the Intercarrier Communication process between wireless service providers. Service providers want a process that does not negatively impact customers, is user friendly, is low cost, focuses on the necessities, and reduces porting conflicts. It should be a single process that is implemented across all wireless service providers. The proposed system should be developed with consideration given to wireline issues thereby lending itself to adoption by the wireline industry. Specific requirements are as follows:

Product Related

- One simple and consistent process for integrated and standalone platforms
- Automated system
- Easy to modify and maintain
- Ability to set timers based on type and direction of port
- Help functions
- Reporting capabilities
- Timestamps and confirmation of receipt of transactions
- Ability to integrate into multiple systems such as Billing, POS and SOA systems

Data Related

- Same data structure for all ports
- User defined parameters for record retention
- Ability to maintain historical database of Request and Response transactions based on user defined parameters
- Ability to maintain Service Provider database
- When applicable, use the existing reason codes from wireline

Communication Protocols

- Adopt standard protocols for communication between carriers
- Effective and efficient communication methodology including Web Access

- Encryption

4.2 Impacts and Responsibilities

The purpose of this section is to describe related activities that both the new and old service providers may encounter and expected responsibilities related to the Intercarrier Communication process. These impacts and responsibilities are not specifically defined within the Intercarrier Communication process, but they are critical to a successful implementation.

4.2.1 New Service Provider

The New Service Provider has specific responsibilities within the porting process. Some of these responsibilities will fall within proprietary processes that will be unique from Service Provider to Service Provider. Other responsibilities will be common to the standardized process that is defined as the Intercarrier Communication Process. Throughout this document, the part of the process that belongs to the New Service Provider will be referred to as the New Intercarrier Communication Process or NICP. The New Service Provider is responsible for the following activities that fall outside the scope of the Intercarrier Communication solution:

- Develop internal procedures for initiating port requests and resolving conflicts
- Validate the NPA-NXX of the subscriber's Mobile Directory Number (MDN) has been opened for porting
- Validate the subscriber's MDN can be ported into the New Service Provider's coverage area based on rate center
- Provide a method of authorizing port requests from Old Service Provider (based on internal legal requirements)
- Develop a procedure to capture all data elements required for completing a valid request
- Develop internal procedures that require the receipt of a confirmation of a valid response from the Old Service Provider prior to sending a Create Order to the NPAC
- Develop procedures to handle and correct invalid requests based on Old Service Provider response and reason codes
- Develop procedures to handle complex multi-line ports without undue burden to the process, customer or the Old Service Provider
- Maintain Intercarrier Contact Information for porting issues
- Staff appropriately to handle porting volumes
- Obtain customer authorization for port requests

4.2.2 Old Service Provider

The Old Service Provider has specific responsibilities within the porting process. Some of these responsibilities will fall within proprietary processes that will be unique from Service Provider to Service Provider. Other responsibilities will be common to the standardized process that is defined as the Intercarrier Communication Process. Throughout this document, the part of the process that belongs to the Old Service Provider will be referred to as the Old Intercarrier Communication Process or OICP. The Old Service Provider is responsible for the following activities that fall outside the scope of the Intercarrier Communication solution:

- Develop internal procedures for receiving port requests and resolving conflicts
- Develop the staffing and system capacity necessary to meet port volumes
- Respond to all New Service Provider requests in a timely manner
- Develop a procedure to validate information in a manner that would reduce conflicts
- When producing a Response for an invalid Request, provide meaningful reason codes, reason code details and remarks
- Develop a procedure to ensure proper deactivation of all services and features related to the number porting out
- Maintain Intercarrier Contact Information for porting issues
- Develop procedures to generate a delay response, when unable to validate a request within the 30-minute guideline
- Develop procedures to handle complex multi-line ports without undue burden to the process, customer or the New Service Provider

4.3 Porting Process Flows

The Intercarrier Communication Process (ICP) is defined as the open interface between the NSP and the OSP. While the ICP clearly defines fields, record layouts, edits and communication procedures, the implementation of the process within proprietary systems may be unique. This allows service providers to build their own ICP solution or purchase one from a third party vendor. Service providers may have different data entry points such as POS, SOE or a third party system. OSP validation can be automated or manual. In addition, while mandatory subscriber information is standard for all service providers, an OSP can chose which of the mandatory fields to use for validation. For example, one OSP can use the Ported Number and User Name for validating a port Request while another OSP may choose to include Bill Address within their validation routines.

Within the diagrams and process narratives, the ICP is divided between functions that relate to the NSP and those that relate to the OSP. This should help the reader in understanding where the event is occurring within the NSP and OSP processes. There are two basic types of wireless ports. The first is a single port, which is defined as a customer requesting to port one number. The second is a multi-line port, which is defined as a customer requesting to port more than one line. In some cases, the OSP may be able to respond to a multi-line port within the 30-minute guideline. In other cases, the complexity of the port may require the OSP to inform the NSP of the need for additional time. This section will detail the process flow for each type of port with a detail description of each process and a narrative.

4.3.1 Single Port Wireless to Wireless

The following sections define the process for a single wireless to wireless port including the OSP options of either confirming or denying the Request. A detailed description of the process boxes along with a narrative follows the process flow chart.

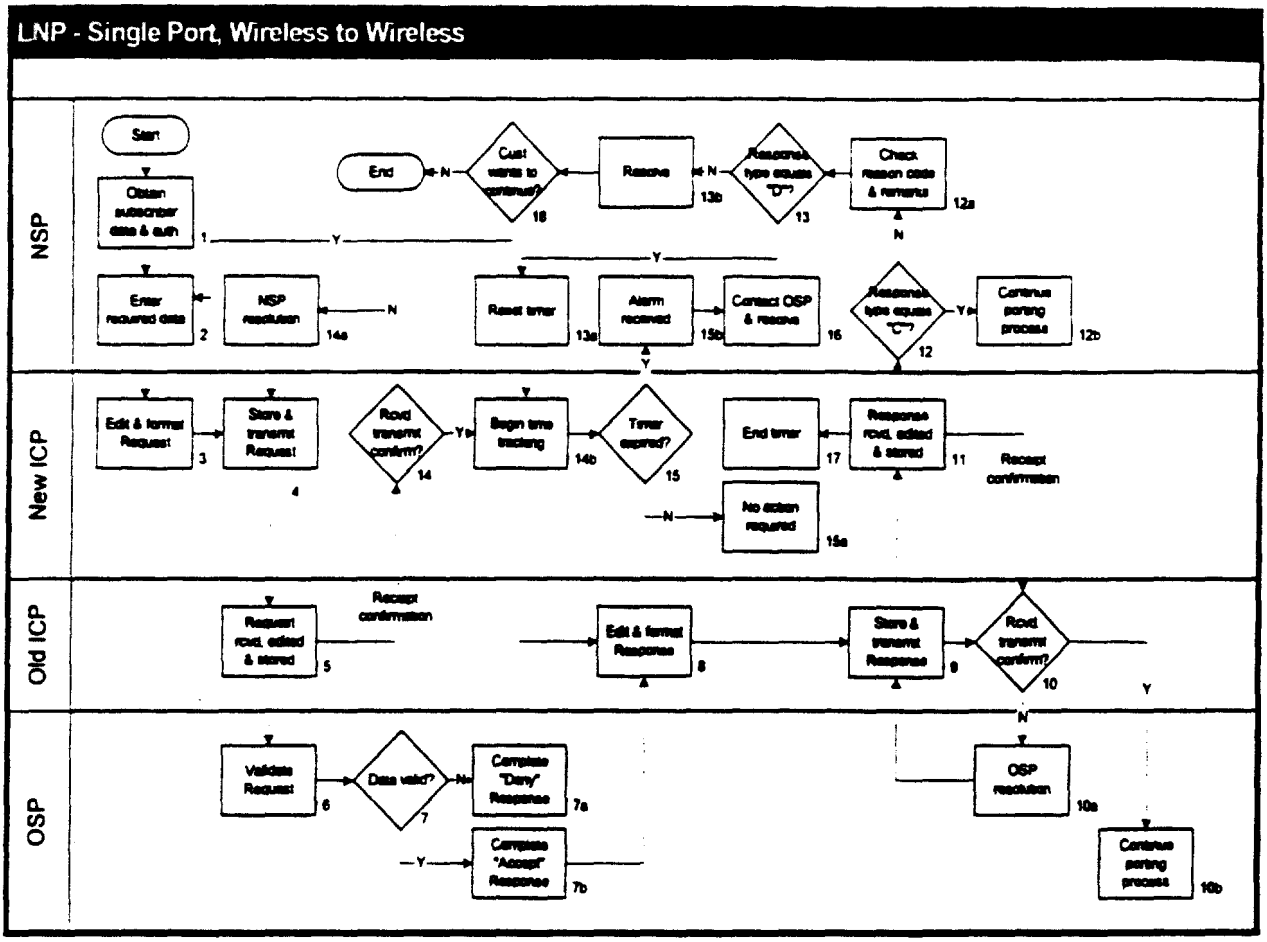

Figure 2 - Single Port, Wireless to Wireless

4.3.1.1 Detail Description of Process Boxes

BOX #	Name	Description
	Start	The Start Point in the Process Flow
1	Obtain subscriber data & auth	The process of obtaining the subscriber information and the authorization to port the number.
2	Enter required data	The Subscriber information is entered into either the NSP's system and fed to the NICP or entered directly into the NICP.
3	Edit & format Request	The NICP edits the input and formats the request into the proper record format.
4	Store & transmit Request	The NICP stores the Request and then transmits it to the OSP according to the routing information.
5	Request rcvd, edited & stored	The Request is received by the OICP, edited for validity and stored within the OICP. Optionally, it can be forwarded to the OSP's internal systems.
6	Validate Request	The Request is validated by the OSP. This can be a manual, semi-automatic or automatic procedure.